

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平10-114466

(43) 公開日 平成10年(1998) 5月6日

(51) Int.Cl.⁶ 識別記号

B 6 5 H 51/18

B 2 3 K 3/06

B 6 5 H 51/10

F I

B 6 5 H 51/18

B 2 3 K 3/06

B 6 5 H 51/10

L

Z

審査請求 未請求 請求項の数 6 F D (全 7 頁)

(21) 出願番号 特願平8-287484

(22) 出願日 平成8年(1996)10月9日

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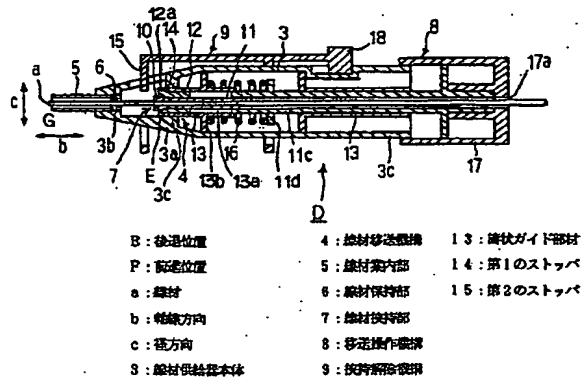
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(54) 【発明の名称】 線材送り方法および装置

(57) 【要約】

【目的】 線材を無駄なく円滑に所定量を移送して作業性を向上させる。

【構成】 線材 a を巻回する線材巻回部と、この線材巻回部から繰り出された線材の外周面を着脱自在に挟持して上記線材を軸線方向前方へ移送する線材移送機構 4 と、この線材移送機構の前方に配設されて上記線材の前端部を所定個所に案内する線材案内部 5 と、所定個所に案内された線材を前進位置で保持する線材保持部 6 とを具備し、上記線材移送機構 4 は、線材の移送方向の後退位置 E で上記線材を着脱自在に挟持する線材挟持部 7 と、この線材挟持部を上記線材の移送方向の前後へ移送操作する移送操作機構 8 と、上記線材の挟持を前進過程の所定位置で解除させる挟持解除機構 9 とを具備し、上記線材巻回部から繰り出された線材を上記線材移送機構 4 と線材保持部 6 との共働で上記線材案内部 5 の前端部から間欠的に送り出すように構成した。



【特許請求の範囲】

【請求項1】 線材巻回部に巻回された線材を繰り出す工程と、この繰り出された線材の外周面を後退位置で着脱自在に挟持する線材挟持工程と、挟持された線材を軸線方向前方へ移送する線材移送工程と、この移送された線材の前端部を線材案内部に案内する線材案内工程と、上記線材案内部に案内された線材を前進位置で保持する線材保持工程と、前進位置で保持された線材の挟持を解除する挟持解除工程とを具備し、上記線材巻回部からの線材を上記線材案内部の前端部から間欠的に送り出すように構成したことを特徴とする線材送り方法。

【請求項2】 線材を巻回する線材巻回部と、この線材巻回部から繰り出された線材の外周面を着脱自在に挟持して上記線材を軸線方向前方へ移送する線材移送機構と、この線材移送機構の前方に配設されて上記線材の前端部を所定個所に案内する線材案内部と、所定個所に案内された線材を前進位置で保持する線材保持部とを具備し、上記線材移送機構は、線材の移送方向の後退位置で上記線材を着脱自在に挟持する線材挟持部と、この線材挟持部を上記線材の移送方向の前後へ移送操作する移送操作機構と、上記線材の挟持を前進過程の所定位置で解除させる挟持解除機構とを具備し、上記線材巻回部から繰り出された線材を上記線材移送機構と線材保持部との共働で上記線材案内部の前端部から間欠的に送り出すように構成したことを特徴とする線材送り装置。

【請求項3】 上記線材挟持部は、線材の挿通孔が中心軸部に形成されて前端部に径方向へ拡張可能な分割片部を有する内筒部材と、この内筒部材に摺動自在に外嵌された外筒部材とを備え、上記外筒部材は上記内筒部材の後退位置で第1のストッパに当接して上記分割片部を径方向へ収縮させて上記線材を挟持するとともに、上記内筒部材の前進過程で第2のストッパに当接して上記分割片部を径方向へ拡大させて上記線材の挟持を解除するように構成したことを特徴とする請求項2に記載の線材送り装置。

【請求項4】 第1のストッパは、上記内筒部材を案内する筒状ガイド部材からなることを特徴とする請求項2または3に記載の線材送り装置。

【請求項5】 上記挟持解除機構は、線材供給器本体に軸移動可能に装着されて可変調整可能な第2のストッパを備えていることを特徴とする請求項2ないし4のいずれかに記載の線材送り装置。

【請求項6】 上記線材供給器本体の前端部に線材に接離可能に転接する移送ローラを配設し、上記線材移送機構の前進位置における上記外筒部材が第2のストッパに当接した上記分割片部の拘束解除状態において、上記移送ローラを線材に圧接させて上記線材を連続的に移送するように構成したことを特徴とする請求項2ないし5のいずれかに記載の線材送り装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】この発明は、たとえば電子部品や電気機器部材などをろう付けする糸半田などの線材を送り出す線材送り方法および装置に関するものである。

【0002】

【従来の技術】従来、この種の線材送り装置として、第7図で示すように、装置本体Aに線材巻回部Bおよび線材移送機構部Cを装着し、この線材巻回部Bからの線材aを上記線材移送機構部Cにおける移送ローラ101

(図8)で繰り出して、可撓性パイプ102の挿通孔を通してノズル部材103から所定個所に供給するように構成したものが知られている。

【0003】

【発明が解決しようとする課題】ところが、上記構成によれば、線材aは線材移送機構部Cから送り出されたのち、可撓性パイプ102を通して前端部のノズル部材103から供給されるために、線材送出位置X1から線材供給位置X2までの移送距離が比較的に長く、上記パイプ102の湾曲などで移送摩擦抵抗が増大すると供給不可能となる。また、上記線材aにたるみなどが途中で発生すると、たとえ線材移送機構部Cからの送出量が一定であっても、上記ノズル部材103から供給される線材供給量のばらつきが大きくなって糸半田によるろう付け作業に支障をきたすおそれがある。さらに、線材巻回部Bからすべての線材aが繰り出されて、上記線材巻回部Bに巻回されていた線材aの最終端部が上記線材移送機構部Cを通過すると、上記線材aの移送手段が存在しないために、上記パイプ102に残留して無駄に廃棄されてきわめて不経済であるなどの課題がある。

【0004】この発明は、上記課題を解消するためになされたもので、線材送出位置から供給位置までの移送距離を短縮して、線材を無駄なく円滑に所定量を移送して作業性のよい線材送り方法および装置を提供することを目的とする。

【0005】

【課題を解決するための手段】請求項1の発明による線材送り方法は、線材巻回部に巻回された線材を繰り出す工程と、この繰り出された線材の外周面を後退位置で着脱自在に挟持する線材挟持工程と、挟持された線材を軸線方向前方へ移送する線材移送工程と、この移送された線材の前端部を線材案内部に案内する線材案内工程と、上記線材案内部に案内された線材を前進位置で保持する線材保持工程と、前進位置で保持された線材の挟持を解除する挟持解除工程とを具備し、線材巻回部からの線材を上記線材案内部の前端部から間欠的に送り出すように構成したことを特徴とする。

【0006】請求項2の発明による線材送り装置は、線材を巻回する線材巻回部と、この線材巻回部から繰り出された線材の外周面を着脱自在に挟持して上記線材を軸線方向前方へ移送する線材移送機構と、この線材移送機

構の前方に配設されて上記線材の前端部を所定個所に案内する線材案内部と、所定個所に案内された線材を前進位置で保持する線材保持部とを具備し、上記線材移送機構は、線材の移送方向の後退位置で上記線材を着脱自在に挟持する線材挟持部と、この線材挟持部を上記線材の移送方向の前後へ移送操作する移送操作機構と、上記線材の挟持を前進過程の所定位置で解除させる挟持解除機構とを具備し、上記線材巻回部から繰り出された線材を上記線材移送機構と線材保持部との共働で上記線材案内部の前端部から間欠的に送り出すように構成したことを特徴とする。

【0007】請求項3の発明による線材送り装置は、上記線材挟持部が、線材の挿通孔を中心軸部に形成して前端部に径方向へ拡張可能な分割片部を有する内筒部材と、この内筒部材に摺動自在に外嵌された外筒部材とを備え、上記外筒部材は上記内筒部材の後退位置で第1のストッパに当接して上記分割片部を径方向へ収縮させて上記線材を挟持するとともに、上記内筒部材の前進過程で第2のストッパに当接して上記分割片部を径方向へ拡大させて上記線材の挟持を解除するように構成したことを特徴とする。

【0008】上記第1のストッパは、請求項4に記載のように、上記内筒部材を案内する筒状ガイド部材から構成することが推奨される。また、上記挟持解除機構は、請求項5に記載のように、上記線材供給器本体に軸移動可能に装着されて、可変調整可能な第2のストッパを具備することが推奨される。さらに、請求項6に記載のように、上記線材供給器本体の前端部に線材に接離可能に転接する移送ローラを配設することが推奨される。

【0009】

【作用】請求項1および2に記載の発明方法および装置によれば、線材を挟持して軸線方向前方へ移送し、所定個所に案内された線材を前進位置で保持し、この保持された線材の挟持を解除して、線材巻回部からの線材を送り出しながら所定個所に供給するものであり、線材送出位置から線材供給位置までの移送距離が比較的短かく近接しているために、低い移送摩擦抵抗でもって線材の円滑な供給を達成することができる。

【0010】また、線材送出位置は線材供給位置に近接しているため、線材にたるみなどの発生のおそれがなく、常にほぼ一定の線材送出量を確保して線材供給量のばらつきをなくし、糸半田によるろう付けなどの作業性を向上させることができる。さらに、線材巻回部から繰り出された線材の最終端部は、線材送出位置を通過すると、上記線材の移送が停止されて残留するけれども、上記線材送出位置と線材供給位置とが近接しているため、無駄に廃棄される線材の発生量を極力抑制してきわめて経済である。

【0011】請求項3に記載の発明によれば、上記線材挟持部が内筒部材と外筒部材とを備え、上記外筒部材を

第1および第2のストッパに当接させることにより、きわめて簡単な構造で堅固に線材を挟持して、上記線材の安定した移送を達成することができる。請求項4に記載のように、第1のストッパが上記内筒部材を案内する筒状ガイド部材から構成されることにより、簡単かつ容易に製造することができ、その場合、上記筒状ガイド部材を線材供給器本体と一体に形成すれば、構造が一層簡単かつ製造が容易である。

【0012】また、請求項5に記載のように、挟持解除機構を上記線材供給器本体に軸移動可能に装着して、第2のストッパを可変調整可能に構成することにより、線材供給量を調整して、糸半田によるろう付けなどの作業性を一層向上させることができる。さらに、請求項6に記載のように、線材供給器本体の前端部に移送ローラを配設し、線材移送機構の前進位置において外筒部材が第2のストッパに当接し、分割片部の拘束解除状態において、上記移送ローラを線材に圧接させて上記線材を連続的に移送することができ、上記線材の間欠的な送り動作と相まって汎用性のある線材送り装置を提供することができる。

【0013】

【実施例】以下、この発明の実施例を図面にもとづいて説明する。図1はこの発明による線材送り装置の一例を糸半田からなる線材を送る装置について示す外観斜視図である。同図において、線材送り装置は、装置本体Aと、線材巻回部Bと、線材供給器Dとから構成されている。上記装置本体Aには、たとえば糸半田からなる線材aを巻回する線材巻回リール1を備えた線材巻回部Bが軸受部材2を介して装着され、上記線材巻回リール1からの線材aを上記線材供給器Dでもって繰り出し、所定個所に供給するように構成されている。

【0014】上記線材供給器Dは、図2で示すように、線材供給器本体3に線材移送機構4、線材案内部5および線材保持部6が組み込まれて構成されている。すなわち、上記線材供給器本体3は、たとえば載頭円錐状の前端部3aを有する金属や合成樹脂製の筒状体から構成され、上記線材移送機構4、線材挟持部7、この線材挟持部7の移送操作機構8および挟持解除機構9を装備している。上記線材案内部5は、上記線材供給器本体3の前端部3aにおける嵌合孔3bに嵌着された、たとえばガイドパイプから構成されて上記線材aの前端部を所定個所に案内するように構成されている。また、上記線材保持部6は、上記線材案内部5の後端部における嵌合孔3bに嵌着された、たとえば環状の弾性体から構成されて、上記線材aの前端部を所定位置に保持するように構成されている。

【0015】上記線材挟持部7は、図3で明瞭に示すように、拡張可能な分割片部10を前端部に突設した内筒部材11と、この内筒部材11に摺動自在に外嵌された外筒部材12とを具備し、上記内筒部材11は操作軸部

材11cと一体もしくは別体に形成されて、上記操作軸部材11cの前端部に突設されている。上記分割片部10は、線材aの挿通孔11aを有する内筒部材11の前端部を軸線方向(矢印b方向)へ延びる分割線11bをもって複数の分割片10a、10bを形成し、これら分割片10a、10bの前端部側を径方向(矢印c方向)へ拡張可能に形成して構成されるとともに、前端部に径大部10cが形成されている。

【0016】上記外筒部材12は前端部につば部12aが突設され、線材供給器本体3の中空軸部3cに嵌着された筒状ガイド部材13の挿通孔13aにおける前端部に軸線方向(矢印b方向)へ軸移動可能に嵌合されるとともに、後退位置E(図2)において、上記つば部12aが上記ガイド部材13の前端部である第1のストッパ14に当接し、上記分割片部10を径方向(矢印c方向)へ収縮させて上記線材aを挟持するとともに、前進位置F(図4)において、変位可能な第2のストッパ15に当接し、上記分割片部10を径方向へ拡大させて上記線材aの挟持を解除するように構成されている。

【0017】上記筒状ガイド部材13の挿通孔13aには、内筒部材11が軸線方向(矢印b方向)へ軸移動可能に遊嵌され、後退方向へ常時ばね力を付勢する復帰ばね部材16が上記内筒部材11の操作軸部材11cの突部11dと上記筒状ガイド部材13の突部13bとの間に圧縮状態で収納されるとともに、上記ばね力に抗して上記内筒部材11に前進方向へ押圧力を付勢する操作体17が上記操作軸部材11cの後端部に嵌着され、上記復帰ばね部材16と操作体17とで上記線材挟持部7の移送操作機構8が構成されている。上記挟持解除機構9は、線材供給器本体3の前端部側外周面に軸移動可能に装着されるとともに、前端部側に上記第2のストッパ15を備え、後端部側に操作体18を有する。

【0018】つぎに、上記構成の動作を説明する。まず、図1における線材巻回部Bからの線材aを、図2で明瞭に示す線材供給器Dに装備された操作体17の挿通孔17a、線材移送機構4、線材挟持部7および線材保持部6に挿通したのち、線材案内部5の前端部から導出させる。この導出状態において、上記線材挟持部7は復帰ばね部材16のばね反力を受けて軸線方向(矢印b方向)へ後退し、その後退位置Eにおいて、上記外筒部材12は、つば部12aが上記ガイド部材13の前端部である第1のストッパ14に当接して分割片部10に外嵌され、図3で明瞭に示すように、上記分割片部10を径方向(矢印c方向)へ収縮させて上記線材aを堅固に挟持する。

【0019】この挟持状態において、上記操作体17を押圧操作して軸方向へ前進移動させると、上記外筒部材12および分割片部10からなる線材挟持部7が前進して、その前進位置F(図4)において、上記外筒部材12が第2のストッパ15に当接し、図5で明瞭に示すよ

うに、上記分割片部10の拘束を解除する。この拘束解除後に、上記操作体17の押圧を解除すると、上記線材移送機構4の後退にともなって、上記分割片部10の径大部10cが外筒部材12の前端部に嵌合した状態で一体的に後退し、この後退移動過程において、上記線材aは、線材保持部6で所定個所に保持されているために、上記線材移送機構8の後退にともなって後退移動することなく上記前進位置Fに保持され、上記後退位置Eから分割片部10の拘束解除までのストロークに相当する長さ寸法の線材aを線材案内部5から送り出すことができる。以下、同様の動作を繰り返して、上記線材巻回部Bからの線材aが上記線材案内部5の前端部から間欠的に送り出される。

【0020】上記構成によれば、線材aを挟持して軸線方向前方へ移送し、所定個所に案内された線材aを前進位置Eで保持し、この保持された線材の挟持を解除して、線材巻回部Bからの線材aを送り出しながら所定個所Gに供給するものであり、線材送出位置(後退位置)Eから線材供給位置Gまでの移送距離が比較的に短かく近接しているために、低い移送摩擦抵抗をもって線材aの円滑な供給を達成することができる。

【0021】また、線材送出位置Eは線材供給位置Gに近接しているため、線材aにたるみなどの発生のおそれがなく、常にほぼ一定の線材送出量を確保して線材供給量のばらつきをなくし、糸半田によるろう付けなどの作業性を向上させることができる。さらに、線材巻回部Bから繰り出された線材aの最終端部は、線材送出位置Eを通過すると、上記線材aの移送が停止されて残留するけれども、上記線材送出位置Eと線材供給位置Gとが近接しているため、無駄に廃棄される線材aの発生量を極力抑制してきわめて経済である。

【0022】上記線材挟持部7の構成によれば、内筒部材11と外筒部材12とから構成し、上記外筒部材12を第1および第2のストッパ14、15に当接させることにより、きわめて簡単な構造で堅固に線材aを挟持して、上記線材aの安定した移送を達成することができる。

【0023】また、上記第1のストッパ14は、上記内筒部材11を案内する筒状ガイド部材13から構成されることにより、簡単かつ容易に製造することができ、その場合、上記筒状ガイド部材13を線材供給器本体3と一体に形成すれば、構造が一層簡単かつ製造が容易である。さらに、上記挟持解除機構9を上記線材供給器本体3に軸移動可能に装着し、第2のストッパ15を可変調整可能に構成することにより、線材aの供給量を調整して糸半田によるろう付けなどの作業性を一層向上させることができる。

【0024】図6はこの発明による線材送り装置の他の例を示す外観斜視図である。同図において、上記線材供給器Dの前端部には移送ローラ20が配設されており、

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上記線材供給器Dの前端部から送出された線材aを上記移送ローラ20でもって連続的に移送できるように構成されている。すなわち、上記構成において、操作体17を押圧して軸方向へ前進移動させると、図4で説明したように、上記線材供給器Dに内蔵された外筒部材12および分割片部10からなる線材挟持部7が前進して、その前進位置Fにおいて、上記外筒部材12が第2のストッパ15に当接し、図5で示したように、上記分割片部10による線材aの拘束が解除される。

【0025】この拘束解除状態において、上記移送ローラ20を径方向（矢印c方向）の内方へ移動させて線材aに圧接させ、これを回転駆動させると、上記線材aを上記移送ローラ20でもって高速度で連続的に移送することができ、上記線材aの多量供給に寄与することができる。また、上記移送ローラ20を線材aの径方向の外方へ移動させて、上記線材aとの圧接を解除させると（図示せず）、上記線材供給器Dでもって前述のとおり、上記線材aの間欠的な送り出しを達成することができ、汎用性のある線材送り装置を提供することができる。

【0026】なお、上記実施例において、線材巻回部Bは装置本体Aに装着してけれども、上記装置本体Aを除去して別室に配設して遠方から線材aを上記線材供給器Dに導びくように構成してもよく、その他の構造についても各種の変形例が案出されることはいうまでもない。

【0027】

【発明の効果】請求項1および2に記載の発明方法および装置によれば、線材を挟持して軸線方向前方へ移送し、所定個所に案内された線材を前進位置で保持し、この保持された線材の挟持を解除して、線材巻回部からの線材を送り出しながら所定個所に供給するものであり、線材送出位置から線材供給位置までの移送距離が比較的短かく近接しているために、低い移送摩擦抵抗でもって線材の円滑な供給を達成することができるとともに、線材にたるみなどの発生のおそれがなく、常にほぼ一定の線材送出量を確保して線材供給量のばらつきをなくし、糸半田によるろう付けなどの作業性を向上させることができ、無駄に廃棄される線材の発生量を極力抑制してきわめて経済である。

【0028】請求項3および4に記載の発明によれば、上記線材挟持部が内筒部材と外筒部材とを備え、上記外筒部材を第1および第2のストッパに当接させることにより、きわめて簡単な構造で堅固に線材を挟持して、上記線材の安定した移送を達成することができ、また、第1のストッパは内筒部材を案内する筒状ガイド部材から構成されることにより、簡単かつ容易に製造することができ、その場合、上記筒状ガイド部材を線材供給器本体と一体に形成すれば、構造が一層簡単かつ製造が容易である。

【0029】請求項5に記載の発明によれば、線材挟持部が内筒部材と外筒部材からなり、挟持解除機構を線材供給器本体に軸移動可能に装着して、第2のストッパを可変調整可能に構成したから、線材供給量を調整して糸半田によるろう付けなどの作業性を一層向上させることができる。さらに、請求項6に記載の発明によれば、線材供給器本体の前端部に配設された移送ローラを線材に圧接させて連続的に移送すれば、上記線材の間欠的な送り動作と相まって汎用性のある線材送り装置を提供することができる。

【図面の簡単な説明】

【図1】この発明による線材送り装置の一例を示す概略的な外観斜視図である。

【図2】同線材送り装置の縦断面図である。

【図3】同線材送り装置の要部の斜視図である。

【図4】同線材送り装置の動作を説明する縦断面図である。

【図5】同送り装置の動作を説明する要部の斜視図である。

【図6】この発明による線材送り装置の他の例を示す概略的な外観斜視図である。

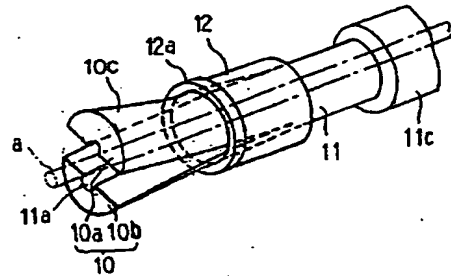
【図7】従来の線材送り装置の一例を示す概略的な側面図である。

【図8】従来の同線材送り装置の要部の斜視図である。

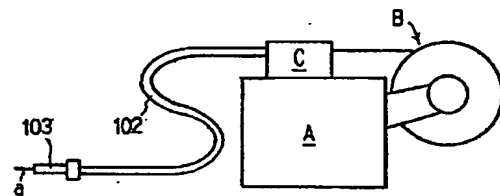
【符号の説明】

- A 装置本体
- B 線材巻回部
- D 線材供給器
- E 後退位置
- F 前進位置
- a 線材
- b 軸線方向
- c 径方向
- 3 線材供給器本体
- 4 線材移送機構
- 5 線材案内部
- 6 線材保持部
- 7 線材挟持部
- 8 移送操作機構
- 9 挟持解除機構
- 10 分割片部
- 11 内筒部材
- 11a 挿通孔
- 12 外筒部材
- 13 筒状ガイド部材
- 14 第1のストッパ
- 15 第2のストッパ
- 20 移送ローラ

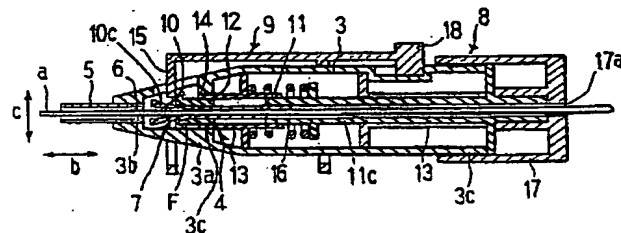
【圖5】



【圖7】

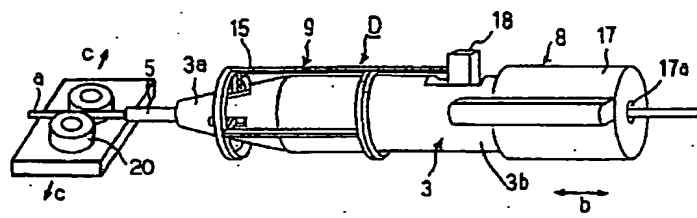


【図 4】



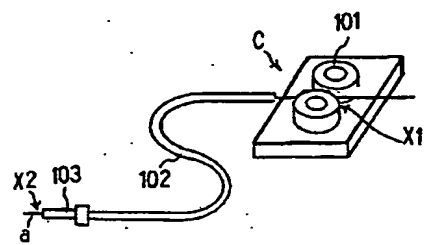
10: 分割片部
11: 内筒部材
11a: 挿通孔
12: 外筒部材

【図6】



20: 移送ローラ

【図8】



PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-114466

(43)Date of publication of application : 06.05.1998

(51)Int.Cl. B65H 51/18
B23K 3/06
B65H 51/10

(21)Application number : 08-287484

(71)Applicant : OMRON CORP

(22)Date of filing : 09.10.1996

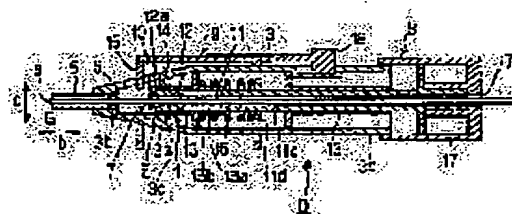
(72)Inventor : BESSHO KIYOFUMI

(54) WIRE FEEDING METHOD AND DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To improve workability by smoothly moving a wire by the specified amount without any waste.

SOLUTION: A wire feeding device is provided with a wire winding part for winding a wire (a), a wire transferring mechanism 4 for attachably and detachably pinching the outer peripheral surface of the wire delivered from the wire winding part and transferring the wire material forward in the axial direction, a wire guide part 5 arranged ahead of the wire material transferring mechanism and for guiding the front end of the wire to the specified part, and a wire holding part 6 for holding the wire guided to the specified part in the advancing position, and the wire transferring mechanism 4 is provided with a wire pinching part 7 for attachably and detachably pinching the wire in the retreating position E in the transferring direction of the wire material, a transferring and operating mechanism for transferring and operating the wire pinching part back and forth in the transferring direction of the wire, and a pinching releasing mechanism 9 for releasing pinching of the wire in the specified position in the advancing process. The wire delivered from the wire wrapping part is intermittently fed out from the front end of the wire guide part 5 in collaboration with the wire transferring mechanism 4 and the wire holding part 6.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision
of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] The process which lets out the wire rod wound around the wire rod winding section, and the wire rod pinching process which pinches this peripheral face of a wire rod that it let out free [attachment and detachment] in a retreat location, The wire rod migration process of transporting the pinched wire rod to the direction front of an axis, and the wire rod guidance process of showing the front end section of this transported wire rod to the interior of a wire rod proposal, The wire rod maintenance process of holding the wire rod guided inside the above-mentioned wire rod proposal in an advance location, The wire rod delivery approach characterized by constituting so that the pinching discharge process of canceling pinching of the wire rod held in the advance location may be provided and the wire rod from the above-mentioned wire rod winding section may be intermittently sent out from the front end section inside the above-mentioned wire rod proposal.

[Claim 2] The wire rod winding section which winds a wire rod, and the wire rod transport station which pinches the peripheral face of the wire rod which it let out from this wire rod winding section, enabling free attachment and detachment, and transports the above-mentioned wire rod to the direction front of an axis, The interior of a wire rod proposal which is arranged ahead of this wire rod transport station, and shows the front end section of the above-mentioned wire rod to a predetermined part, The wire rod attaching part which holds the wire rod guided in the predetermined part in an advance location is provided. The above-mentioned wire rod transport station The wire rod pinching section which pinches the above-mentioned wire rod free [attachment and detachment] in the retreat location of the migration direction of a wire rod, The migration actuation device which carries out migration actuation of this wire rod pinching section to the migration direction order of the above-mentioned wire rod, The wire rod feed gear characterized by constituting so that the wire rod which possessed the pinching discharge device in which pinching of the above-mentioned wire rod was made to cancel in the predetermined location of an advance process, and it let out from the above-mentioned wire rod winding section may be intermittently sent out from the front end section inside the above-mentioned wire rod proposal by having two incomes with the above-mentioned wire rod transport station and a wire rod attaching part.

[Claim 3] The container liner member to which the insertion hole of a wire rod is formed in the medial-axis section, and, as for the above-mentioned wire rod pinching section, has the piece section of division which can expand and contract in the direction of a path in the front end section, While having the outer case member attached outside by this container liner member free [sliding], and the above-mentioned outer case member's shrinking the above-mentioned piece section of division in the direction of a path in contact with the 1st stopper in the retreat location of the above-mentioned container liner member and pinching the above-mentioned wire rod The wire rod feed gear according to claim 2 characterized by constituting so that the above-mentioned piece section of division may be made to expand in the direction of a path in contact with the 2nd stopper in the advance process of the above-mentioned container liner member and pinching of the above-mentioned wire rod may be canceled.

[Claim 4] The 1st stopper is a wire rod feed gear according to claim 2 or 3 characterized by

consisting of a tubed guide member to which it shows the above-mentioned container liner member.

[Claim 5] the above-mentioned pinching discharge device — the body of a wire rod feeder — a shaft — the wire rod feed gear according to claim 2 to 4 characterized by having been equipped movable and having the 2nd stopper in which adjustable setting is possible.

[Claim 6] The wire rod feed gear according to claim 2 to 5 carry out having constituted so that the migration roller which **** possible [the attachment and detachment to a wire rod] may be arranged in the front-end section of the above-mentioned body of a wire rod feeder, the pressure welding of the above-mentioned migration roller may be carried out to a wire rod in the restricted discharge condition of the above-mentioned piece section of division that the above-mentioned outer case member in the advance location of the above-mentioned wire rod transport station contacted the 2nd stopper and the above-mentioned wire rod might be transported continuously as the description.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the wire rod delivery approach and equipment which send out wire rods, such as yarn solder which solders electronic parts, an electrical machinery and apparatus member, etc.

[0002]

[Description of the Prior Art] Conventionally, as this kind of a wire rod feed gear, as shown in Fig. 7, the body A of equipment is equipped with the wire rod winding section B and the wire rod transport station section C, it lets out the wire rod a from this wire rod winding section B with the migration roller 101 (drawing 8) in the above-mentioned wire rod transport station section C, and what was constituted so that a predetermined part might be supplied from the nozzle member 103 through the insertion hole of the flexible pipe 102 is known.

[0003]

[Problem(s) to be Solved by the Invention] However, according to the above-mentioned configuration, since a wire rod a is supplied from the nozzle member 103 of the front end section through the flexible pipe 102 after it is sent out from the wire rod transport station section C, if the migration distance from the wire rod sending-out location X1 to the wire rod supply location X2 is long in comparison and migration frictional resistance increases by the curve of the above-mentioned pipe 102 etc., supply of it will become impossible. Moreover, when sag etc. occurs on the way in the above-mentioned wire rod a, even if the amount of sending out from the wire rod transport station section C is fixed, there will be a possibility of dispersion in the wire rod amount of supply supplied from the above-mentioned nozzle member 103 becoming large, and causing trouble to soldering by yarn solder. furthermore, very uneconomical [all the wire rods a let out from the wire rod winding section B, if the last edge of the wire rod a currently wound around the above-mentioned wire rod winding section B passes the above-mentioned wire rod transport station section C, since the migration means of the above-mentioned wire rod a does not exist, it remains to the above-mentioned pipe 102, and is discarded vainly, and] -- etc. -- a technical problem occurs.

[0004] This invention was made in order to cancel the above-mentioned technical problem, it shortens the migration distance from a wire rod sending-out location to a supply location, and aims at transporting the specified quantity for a wire rod smoothly without futility, and offering the good wire rod delivery approach and the equipment of workability.

[0005]

[Means for Solving the Problem] The process which lets out the wire rod with which the wire rod delivery approach by invention of claim 1 was wound around the wire rod winding section, The wire rod pinching process which pinches the peripheral face of this wire rod that it let out free [attachment and detachment] in a retreat location, The wire rod migration process of transporting the pinched wire rod to the direction front of an axis, and the wire rod guidance process of showing the front end section of this transported wire rod to the interior of a wire rod proposal, The wire rod maintenance process of holding the wire rod guided inside the above-mentioned wire rod proposal in an advance location, and the pinching discharge process of

carceling pinching of the wire rod held in the advance location are provided, and it is characterized by constituting so that the wire rod from the wire rod winding section may be intermittently sent out from the front end section inside the above-mentioned wire rod proposal. [0006] The wire rod winding section around which the wire rod feed gear by invention of claim 2 winds a wire rod, The wire rod transport station which pinches the peripheral face of the wire rod which it let out from this wire rod winding section, enabling free attachment and detachment, and transports the above-mentioned wire rod to the direction front of an axis, The interior of a wire rod proposal which is arranged ahead of this wire rod transport station, and shows the front end section of the above-mentioned wire rod to a predetermined part, The wire rod attaching part which holds the wire rod guided in the predetermined part in an advance location is provided. The above-mentioned wire rod transport station The wire rod pinching section which pinches the above-mentioned wire rod free [attachment and detachment] in the retreat location of the migration direction of a wire rod, The migration actuation device which carries out migration actuation of this wire rod pinching section to the migration direction order of the above-mentioned wire rod, The pinching discharge device in which pinching of the above-mentioned wire rod is made to cancel in the predetermined location of an advance process is provided, and it is characterized by constituting so that the wire rod which it let out from the above-mentioned wire rod winding section may be intermittently sent out from the front end section inside the above-mentioned wire rod proposal by having two incomes with the above-mentioned wire rod transport station and a wire rod attaching part.

[0007] The container liner member to which the above-mentioned wire rod pinching section forms the insertion hole of a wire rod in the medial-axis section, and the wire rod feed gear by invention of claim 3 has the piece section of division which can expand and contract in the direction of a path in the front end section, While having the outer case member attached outside by this container liner member free [sliding], and the above-mentioned outer case member's shrinking the above-mentioned piece section of division in the direction of a path in contact with the 1st stopper in the retreat location of the above-mentioned container liner member and pinching the above-mentioned wire rod It is characterized by constituting so that the above-mentioned piece section of division may be made to expand in the direction of a path in contact with the 2nd stopper in the advance process of the above-mentioned container liner member and pinching of the above-mentioned wire rod may be canceled.

[0008] Constituting the 1st stopper of the above from a tubed guide member according to claim 4 to which it shows the above-mentioned container liner member like is recommended. moreover, the above-mentioned pinching discharge device -- being according to claim 5 -- like -- the above-mentioned body of a wire rod feeder -- a shaft -- it being equipped movable and providing the 2nd stopper in which adjustable setting is possible is recommended. Furthermore, arranging the migration roller according to claim 6 which **** possible [the attachment and detachment to a wire rod] like in the front end section of the above-mentioned body of a wire rod feeder is recommended.

[0009]

[Function] According to the invention approach given in claims 1 and 2, and equipment, pinch a wire rod, transport to the direction front of an axis, hold the wire rod guided in the predetermined part in an advance location, and pinching of this held wire rod is canceled. Since a predetermined part is supplied and the migration distance from a wire rod sending-out location to a wire rod supply location is carrying out short **** contiguity in comparison, sending out the wire rod from the wire rod winding section, smooth supply of a wire rod can be attained as it is also at low migration frictional resistance.

[0010] Moreover, since the wire rod sending-out location is close to a wire rod supply location, there is no fear of generating, such as sag, in a wire rod, and it can secure the always almost fixed amount of wire rod sending out, can abolish dispersion in the wire rod amount of supply, and can raise workability, such as soldering by yarn solder. Furthermore, since the above-mentioned wire rod sending-out location and the wire rod supply location are close although migration of the above-mentioned wire rod is stopped and it remains if it passes through a wire rod sending-out location, the last edge of the wire rod which it let out from the wire rod winding

section controls the yield of the wire rod discarded vainly as much as possible, and is economy very much.

[0011] According to invention according to claim 3, when the above-mentioned wire rod pinching section is equipped with a container liner member and an outer case member and makes the above-mentioned outer case member contact the 1st and 2nd stoppers, a wire rod can be strongly pinched with very easy structure, and the migration by which the above-mentioned wire rod was stabilized can be attained. If it can manufacture simply and easily and the above-mentioned tubed guide member is formed in the body of a wire rod feeder, and one in that case by consisting of tubed guide members according to claim 4 to which the 1st stopper shows the above-mentioned container liner member like, structure's being still easier and manufacture are easy.

[0012] moreover -- being according to claim 5 -- like -- a pinching discharge device -- the above-mentioned body of a wire rod feeder -- a shaft -- by equipping movable and constituting the 2nd stopper possible [adjustable setting], the wire rod amount of supply can be adjusted and workability, such as soldering by yarn solder, can be raised further. Furthermore, intermittent delivery actuation of the above-mentioned wire rod and the wire rod feed gear which is flexible conjointly according to claim 6 can be offered by the ability arranging a migration roller in the front end section of the body of a wire rod feeder, an outer case member's contacting the 2nd stopper in the advance location of a wire rod transport station, carrying out the pressure welding of the above-mentioned migration roller to a wire rod in the restricted discharge condition of the piece section of division like, and transporting the above-mentioned wire rod continuously.

[0013]

[Example] Hereafter, the example of this invention is explained based on a drawing. Drawing 1 is the appearance perspective view showing the equipment which sends the wire rod which consists an example of the wire rod feed gear by this invention of yarn solder. In this drawing, the wire rod feed gear consists of a body A of equipment, the wire rod winding section B, and a wire rod feeder D. The above-mentioned body A of equipment is equipped with the wire rod winding section B equipped with the wire rod winding reel 1 which winds the wire rod a which consists of yarn solder through the bearing member 2, and it lets out that it is also with the above-mentioned wire rod feeder D about the wire rod a from the above-mentioned wire rod winding reel 1, and it is constituted so that a predetermined part may be supplied.

[0014] The wire rod transport station 4, the interior 5 of a wire rod proposal, and the wire rod attaching part 6 are incorporated by the body 3 of a wire rod feeder, and the above-mentioned wire rod feeder D is constituted, as drawing 2 shows. That is, the above-mentioned body 3 of a wire rod feeder consisted of tube-like objects of the metal which has for example, truncated conic front end section 3a, or the product made of synthetic resin, and has equipped the migration actuation device 8 and the pinching discharge device 9 of the above-mentioned wire rod transport station 4, the wire rod pinching section 7, and this wire rod pinching section 7. For example, it was attached in fitting hole 3b in front end section 3a of the above-mentioned body 3 of a wire rod feeder, the above-mentioned interior 5 of a wire rod proposal is constituted so that it may consist of guide pipes and may show the front end section of the above-mentioned wire rod a to a predetermined part. Moreover, for example, it was attached in fitting hole 3b in the back end section inside [5] the above-mentioned wire rod proposal, it consists of annular elastic bodies, and the above-mentioned wire rod attaching part 6 is constituted so that the front end section of the above-mentioned wire rod a may be held in a predetermined location.

[0015] As drawing 3 shows clearly, the above-mentioned wire rod pinching section 7 possesses the container liner member 11 which protruded on the front end section the piece section 10 of division which can expand and contract, and the outer case member 12 attached outside by this container liner member 11 free [sliding], and the above-mentioned container liner member 11 is formed in actuation shank material 11c, one, or another object, and it protrudes on the front end section of the above-mentioned actuation shank material 11c. The above-mentioned piece section 10 of division forms two or more pieces 10a and 10b of division as parting line 11b prolonged in the direction of an axis (the direction of arrow-head b) in the front end section of the container liner member 11 which has insertion hole 11a of a wire rod a is also. While forming

the front end section side of the pieces 10a and 10b of these division in the direction of a path (the direction of arrow-head c) possible [expanding and contracting] and being constituted, path voluminousness 10c is formed in the front end section.

[0016] the front end section in insertion hole 13a of the tubed guide member 13 by which flange section 12a protruded on the front end section, and, as for the above-mentioned outer case member 12, was attached in it at hollow shaft section 3c of the body 3 of a wire rod feeder — the direction of an axis (the direction of arrow-head b) — a shaft, while fitting is carried out movable While the above-mentioned flange section 12a contacts the 1st stopper 14 which is the front end section of the above-mentioned guide member 13, shrinks the above-mentioned piece section 10 of division in the direction of a path (the direction of arrow-head c) and pinches the above-mentioned wire rod a in the retreat location E (drawing 2) In the advance location F (drawing 4), the 2nd stopper 15 which can be displaced is contacted, and it is constituted so that the above-mentioned piece section 10 of division may be made to expand in the direction of a path and pinching of the above-mentioned wire rod a may be canceled.

[0017] In insertion hole 13a of the above-mentioned tubed guide member 13 the container liner member 11 — the direction of an axis (the direction of arrow-head b) — a shaft — it fitting in loosely movable, and, while the return spring member 16 which always energizes the spring force in the retreat direction is contained in the state of compression between 11d of projected parts of actuation shank material 11c of the above-mentioned container liner member 11, and projected part 13b of the above-mentioned tubed guide member 13 The actuation object 17 which resists the above-mentioned spring force and energizes thrust in the advance direction to the above-mentioned container liner member 11 is attached in the back end section of the above-mentioned actuation shank material 11c, and the migration actuation device 8 of the above-mentioned wire rod pinching section 7 consists of an above-mentioned return spring member 16 and an actuation object 17. the above-mentioned pinching discharge device 9 — the front end section side peripheral face of the body 3 of a wire rod feeder — a shaft — while being equipped movable, a front end section side is equipped with the 2nd stopper 15 of the above, and it has the actuation object 18 in a back end section side.

[0018] Below, actuation of the above-mentioned configuration is explained. First, after inserting the wire rod a from the wire rod winding section B in drawing 1 in insertion hole 17a, the wire rod transport station 4, the wire rod pinching section 7, and the wire rod attaching part 6 of the actuation object 17 with which the wire rod feeder D clearly shown by drawing 2 was equipped, it is made to draw from the front end section inside [5] a wire rod proposal. In this derivation condition, the above-mentioned wire rod pinching section 7 retreats in the direction of an axis (the direction of arrow-head b) in response to the spring reaction force of the return spring member 16, and is set in that retreat location E. The above-mentioned outer case member 12 As it is attached outside the piece section 10 of division in contact with the 1st stopper 14 whose flange section 12a is the front end section of the above-mentioned guide member 13 and drawing 3 shows clearly, the above-mentioned piece section 10 of division is shrunk in the direction of a path (the direction of arrow-head c), and the above-mentioned wire rod a is pinched strongly.

[0019] In this pinching condition, if press actuation of the above-mentioned actuation object 17 is carried out and advance migration is carried out to shaft orientations, as the wire rod pinching section 7 which consists of the above-mentioned outer case member 12 and the piece section 10 of division moves forward, it contacts to the 2nd stopper 15 and drawing 5 shows that advance location F (drawing 4) clearly in the above-mentioned outer case member 12, constraint of the above-mentioned piece section 10 of division will be canceled. After this restricted discharge, if press of the above-mentioned actuation object 17 is canceled, with retreat of the above-mentioned wire rod transport station 4, path voluminousness 10c of the above-mentioned piece section 10 of division will retreat in one in the condition of having fitted into the front end section of the outer case member 12, and will set in this retreat migration process. Since the above-mentioned wire rod a is held by the wire rod attaching part 6 in the predetermined part, it is held in the above-mentioned advance location F, without carrying out retreat migration with retreat of the above-mentioned wire rod transport station 8. The wire rod a of the die-length dimension equivalent to the stroke from the above-mentioned retreat

location E to restricted discharge of the piece section 10 of division can be sent out from the interior 5 of a wire rod proposal. Hereafter, the same actuation is repeated and the wire rod a from the above-mentioned wire rod winding section B is intermittently sent out from the front end section inside [5] the above-mentioned wire rod proposal.

[0020] According to the above-mentioned configuration, pinch a wire rod a, transport to the direction front of an axis, hold the wire rod a guided in the predetermined part in the advance location E, and pinching of this held wire rod is canceled. Since the predetermined part G is supplied and the migration distance from the wire rod sending-out location (retreat location) E to the wire rod supply location G is carrying out short **** contiguity in comparison, sending out the wire rod a from the wire rod winding section B, smooth supply of a wire rod a can be attained as it is also at low migration frictional resistance.

[0021] Moreover, since the wire rod sending-out location E is close to the wire rod supply location G, there is no fear of generating, such as sag, in a wire rod a, and it can secure the always almost fixed amount of wire rod sending out, can abolish dispersion in the wire rod amount of supply, and can raise workability, such as soldering by yarn solder. Furthermore, since the above-mentioned wire rod sending-out location E and the wire rod supply location G are close although migration of the above-mentioned wire rod a is stopped and it remains if it passes through the wire rod sending-out location E, the last edge of the wire rod a which it let out from the wire rod winding section B controls the yield of the wire rod a discarded vainly as much as possible, and is economy very much.

[0022] According to the configuration of the above-mentioned wire rod pinching section 7, by constituting from a container liner member 11 and an outer case member 12, and making the above-mentioned outer case member 12 contact the 1st and 2nd stoppers 14 and 15, a wire rod a can be strongly pinched with very easy structure, and the migration by which the above-mentioned wire rod a was stabilized can be attained.

[0023] Moreover, if the 1st stopper 14 of the above can be manufactured simply and easily and the above-mentioned tubed guide member 13 is formed in the body 3 of a wire rod feeder, and one in that case by consisting of tubed guide members 13 to which it shows the above-mentioned container liner member 11, structure's being still easier and manufacture are easy for it. furthermore, the above-mentioned pinching discharge device 9 -- the above-mentioned body 3 of a wire rod feeder -- a shaft -- by equipping movable and constituting the 2nd stopper 15 possible [adjustable setting], the amount of supply of a wire rod a can be adjusted, and workability, such as soldering by yarn solder, can be raised further.

[0024] Drawing 6 is the appearance perspective view showing other examples of the wire rod feed gear by this invention. In this drawing, the migration roller 20 is arranged in the front end section of the above-mentioned wire rod feeder D, and it is constituted so that it can transport continuously that it is also with the above-mentioned migration roller 20 about the wire rod a sent out from the front end section of the above-mentioned wire rod feeder D. Namely, if the actuation object 17 is pressed and advance migration is carried out to shaft orientations in the above-mentioned configuration, as drawing 4 explained The wire rod pinching section 7 which consists of the outer case member 12 and the piece section 10 of division which were built in the above-mentioned wire rod feeder D moves forward, the above-mentioned outer case member 12 contacts the 2nd stopper 15 in the advance location F, and as drawing 5 showed, constraint of the wire rod a by the above-mentioned piece section 10 of division is canceled.

[0025] In this restricted discharge condition, if the above-mentioned migration roller 20 is moved to a way among the directions of a path (the direction of arrow-head c), a pressure welding is carried out to a wire rod a and the rotation drive of this is carried out, it can transport continuously at high speed that it is also with the above-mentioned migration roller 20 about the above-mentioned wire rod a, and can contribute to abundant supply of the above-mentioned wire rod a. Moreover, if the above-mentioned migration roller 20 is moved to a way outside the direction of a path of a wire rod a and a pressure welding with the above-mentioned wire rod a is made to cancel (not shown), the intermittent send of the above-mentioned wire rod a can be attained as above-mentioned as it is also with the above-mentioned wire rod feeder D, and a flexible wire rod feed gear can be offered.

[0026] in addition, the above-mentioned example -- setting -- the wire rod winding section B -- the body A of equipment -- equipping -- however, the above-mentioned body A of equipment -- removing -- another room -- arranging -- a distant place to the wire rod a -- the above-mentioned wire rod feeder D -- ***** -- it cannot be overemphasized that you may constitute like and various kinds of modifications are thought out also about other structures.

[0027]

[Effect of the Invention] According to the invention approach given in claims 1 and 2, and equipment, pinch a wire rod, transport to the direction front of an axis, hold the wire rod guided in the predetermined part in an advance location, and pinching of this held wire rod is canceled. Since a predetermined part is supplied and the migration distance from a wire rod sending-out location to a wire rod supply location is carrying out short **** contiguity in comparison, sending out the wire rod from the wire rod winding section While being able to attain smooth supply of a wire rod as it is also at low migration frictional resistance There is no fear of generating, such as sag, in a wire rod, the always almost fixed amount of wire rod sending out can be secured, dispersion in the wire rod amount of supply can be abolished, workability, such as soldering by yarn solder, can be raised, the yield of the wire rod discarded vainly is controlled as much as possible, and it is economy very much.

[0028] When according to invention given in claims 3 and 4 the above-mentioned wire rod pinching section is equipped with a container liner member and an outer case member and makes the above-mentioned outer case member contact the 1st and 2nd stoppers By being able to pinch a wire rod strongly with very easy structure, and being able to attain the migration by which the above-mentioned wire rod was stabilized, and the 1st stopper consisting of tubed guide members to which it shows a container liner member If it can manufacture simply and easily and the above-mentioned tubed guide member is formed in the body of a wire rod feeder, and one in that case, structure's being still easier and manufacture are easy.

[0029] according to invention according to claim 5 -- the wire rod pinching section -- from a container liner member and an outer case member -- becoming -- a pinching discharge device -- the body of a wire rod feeder -- a shaft -- since it equipped movable and the 2nd stopper was constituted possible [adjustable setting], the wire rod amount of supply can be adjusted and workability, such as soldering by yarn solder, can be raised further. Furthermore, if the pressure welding of the migration roller which was arranged in the front end section of the body of a wire rod feeder according to invention according to claim 6 is carried out to a wire rod and it is transported continuously, intermittent delivery actuation of the above-mentioned wire rod and the wire rod feed gear which is flexible conjointly can be offered.

[Translation done.]